Natural Resources Conservation Service
National Water & Climate Center
Snow Survey & Water Supply Forecasting Program

SnowNews

Summer 2018
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Western Snow Conference draws nearly 130 attendees

Jolyne Lea
NWCC Forecast Hydrologist

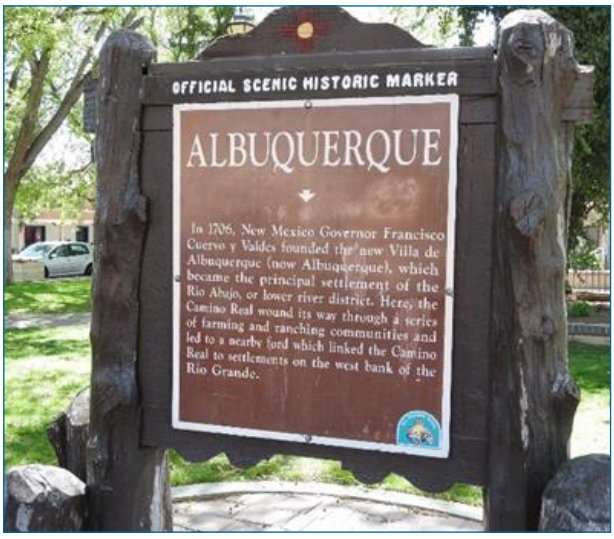
The 86th Annual Western Snow Conference (WSC) was held April 16-19 in Albuquerque, New Mexico.

Of the nearly 130 in attendance, many were students and professors from western universities presenting their research and engaging the other attendees at the conference.

Additional participants represented Federal, state, and local agencies across the country, R&D consulting firms, as well as several of our Canadian counterparts.

The conference kicked off with a short course on Monday "Communicating Complex Environmental Information to Broad Audiences." The course highlighted the different ways to communicate snow science to the public and how to best reach the intended audiences for sharing snow information and products.

Past Western Snow Conference General Chair and NRCS Washington Water Supply Specialist Scott Pattee (left) hands over the reins to incoming General Chair Ron Abramovich (right), NRCS Idaho Water Supply Specialist.



Albuquerque welcomed the 2018 Western Snow Conference. The town was founded in 1706.

Oral paper sessions started on Tuesday, with a keynote address by Dr. David Guzler of the University of New Mexico.

The oral sessions focused on advances in snow modeling and observations, and the science and management of droughts, floods and other extreme events.

A late afternoon poster session showcased the poster presentations of snow researchers.

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Inside this issue:

86th Annual Western Snow Conference

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Wednesday began with a presentation on the changing mountain snowpack, with a focus on historical trends and prediction of the future, followed by the final session on advances in snow monitoring and measurement.

The evening awards banquet featured speaker John Fleck, Director, University of New Mexico Water Resources Program and author of "Water is for Fighting over and other myths about water in the West."

Thursday's technical tour had the group winding their way up the Rio Grande to the United States' first-ever USGS stream gaging station installed in 1889. While there, the group learned about the history of why the gage was installed in this location as well as the latest streamflow and water quality measurement techniques.

Networking with colleagues was a highlight of the meeting where new research and information sharing, along with new tools and technology discussions, create a great way to improve snow and water supply forecasting sciences.

For a complete listing of oral and poster papers and their authors, the program is available at https://westernsnowconference.org/meeting/2018.

Conference proceedings will be available on the WSC website in about six months.

Awards banquet speaker John Fleck, Director, University of New Mexico Water Resources Program

2019 Western Snow Conference will be April 15-18 in Reno, Nevada

For more information, contact General Chair Ron Abramovich, (208) 378-5741

"Networking with colleagues was a highlight of the meeting where new research and information sharing, along with new tools and technology discussions, create a great way to improve snow and water supply forecasting sciences."

Attendees visit the USGS Rio Grande Gaging Station and discuss streamflow and water quality measurement techniques.

Update: National Soil Moisture Network

Mike Strobel
NWCC Director,
NSMN Team Member

The National Soil Moisture Network (NSMN) is a cooperative effort between multiple Federal, State, local, university, industry and citizen groups to develop a nationwide tool for assessing soil moisture conditions as related to drought.

This is an effort identified in the President's 2012 Climate Action Plan under the authority of the National Integrated Drought Information System (NIDIS).

There were meetings conducted in 2013 in Kansas City and in 2016 in Boulder to begin to develop an approach to this network.

The discussion of a coordinated NSMN was also part of the Marena, Oklahoma In Situ Sensor Testbed (MOISST) workshops in Springwater, Oklahoma in 2017 and Lincoln, Nebraska in 2018.

Network Concept

The concept for this network is to bring together data from a wide variety of in-situ networks that monitor soil moisture in the U.S. and couple this information with remote sensing (satellite and airplane) data and models. One proposed outcome would be a daily map product of soil moisture conditions for the country.

At the 2018 MOISST workshop in Lincoln, many of the challenges in developing a NSMN were identified.

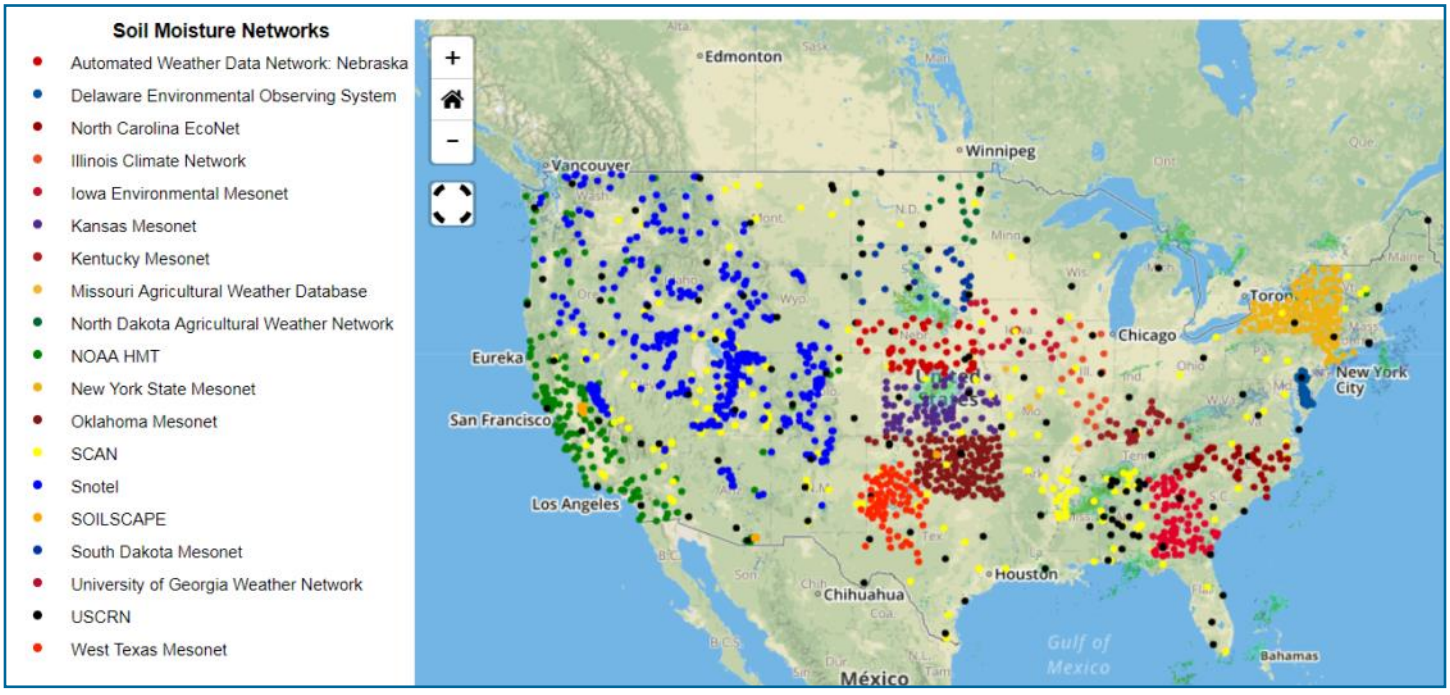
These challenges include gaps in available soil moisture data and products, accessing various sources of data, funding for the program, challenges in data integration, resulting products from the program, formats for data and products, and how products would be used by different categories of potential users, such as the U.S. Drought Monitor, researchers, agricultural producers, industry, etc.

One of the first steps is to establish how all the different agencies and groups would fit into an administrative structure and how their interactions would be coordinated.

Two levels of team leadership were proposed:

- A Steering Committee made up of 1-2 representatives from each agency and organization involved with the NSMN.
- An Executive Committee of around 10 members to coordinate activities and oversee various efforts to advance the NSMN.

We will continue to report on activities of this team as new developments occur.



SCAN site installations a group effort in Missouri

Note: *The Soil Climate Analysis Network (SCAN) for the U.S. is administered by the NRCS National Water and Climate Center (NWCC). SCAN sites are automated soil climate monitoring stations.*

Missouri was the site for several recent SCAN site installations. Five new sites were installed in four different counties in the week-long installation project. One existing SCAN site was moved to a new location.

Jorge Lugo-Camacho, Missouri State Soil Scientist and **Deb Harms**, NWCC Water and Climate Monitoring Team Lead, participated in the installations.

Several soil scientists from Missouri also assisted in the installations, setting up tower bases in concrete and excavating soil pits to gather complete soil descriptions and sampling.

NRCS field staff then performed sensor installation and final system integration at each site.

The SCAN site relocation was performed to accommodate construction at the original site.

Relocation involved excavating and resetting the tower and instrumentation. Somewhat of a surprise, throughout the move the SCAN site instrumentation continued to record data.

The five new SCAN sites are currently awaiting final modem installation and will be online very soon.

Twin Pines SCAN site in Missouri. Photo courtesy: Jorge Lugo-Camacho, NRCS State Soil Scientist.

Sampling the SCAN site soil at the Mark Twain High School in Ralls County, Missouri. Photo courtesy: Mark Abney, NRCS Assistant State Soil Scientist.

With the new site installations, the Soil Climate Analysis Network will grow to 222 sites located across the United States, including Puerto Rico and the U.S. Virgin Islands.

For more information on SCAN, click here.

Boise hosts 3rd annual Field Operations Workshop

The Idaho Data Collection Office (DCO) recently hosted the Snow Survey and Water Supply Program's annual Field Operations Workshop. Seventeen hydrologists, hydrologic technicians, and electronics technicians from the western states participated in the three-day hands-on workshop.

Shawn Nield, Idaho Snow Survey Program Manager, welcomed the participants and provided an overview on the importance of the Program to water users in the West.

Next on the agenda were updates from several states on their field season activities. **Tom Beers**, Idaho DCO, **Dan Kenney**, Alaska DCO, and **Zach Wilson**, Colorado DCO, provided details on new site installations, telemetry conversions, and radio upgrades. There was also a group discussion on Judd snow depth sensors.

Chris Brown, National Water and Climate Center (NWCC) Hydrologist, gave updates on pressure transducer calibration failure rates, adding that the team at the Electronics Maintenance Facility (EMF) will continue to analyze and report on calibration data for both new and returning sensors.

Day two kicked off with Dan Kenney discussing Iridium system installation and maintenance, including cost, ease of installation, and signal availability.

Alex Rebentisch, NWCC Electronics Technician, then led two group discussions relating to the Program's National Engineering Handbook, Part 622, Snow Survey and Water Supply Forecasting. The discussions focused on proposed changes to the installation and maintenance chapters of the Handbook.

Melissa Webb, Oregon DCO, provided the participants with an update on RavenXT cellular modems, including recommended equipment for a site conversion and the lessons learned so far in the site conversion process. Tools for modem monitoring were discussed. The group then used test setups to learn how to configure the new RV50 modem.

The final day of the workshop opened with Alex Rebentisch giving an overview of the GOES system and recommended equipment for a GOES setup at the SNOTEL site. The participants then learned how to setup a new TX321 GOES radio.

Status from the Air Temperature Working Group was next on the agenda. **Lauren Austin**, Oregon DCO, reported that all test setups had been deployed and were collecting data. Four types of sensors and two shields are being field-tested. Lauren presented preliminary data from test sites in Oregon.

Alex Rebentisch then showed a generic CRBasic program for setting up RS-232 communication. Alex also demonstrated how to connect to a sensor using LoggerNet.

Field maintenance techniques were the focus of discussion and demonstration by **John Weeks**, NWCC Lead Technician. Topics included: connection taping techniques; measurement of current in situ, battery choice; testing and maintenance; NEMA box sealing and desiccant; measurement of recharge specific gravity; mineral oil (or other types of oil) use to prevent evaporation through manometer tubes.

The workshop concluded with a tour of the Idaho DCO shop space, led by Dan Kenney, looking at the use of space and the equipment within. Dan also provided a demonstration on how to connect to an Iridium radio and how to send a message through the radio that can be viewed online.

Next year's Field Operations Workshop is tentatively scheduled for the third week in May, 2019. The hope is to hold the workshop at the Alaska DCO.

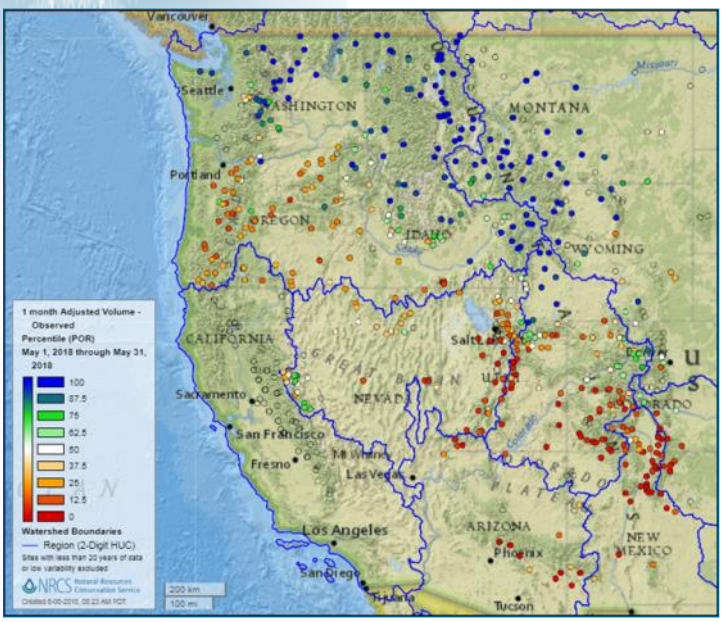
Attendee photo on page 6

Dan Kenney, Alaska DCO, demonstrates how to set up an Iridium Data Modem to participants at the Field Operations Workshop.

Extreme high and low streamflows during May

David Garen
NWCC Hydrologist

Abundant snowpack, which has persisted all year, combined with very warm temperatures, led to rapid and intense snowmelt in the northern areas of the West during the month of May.



Click map to enlarge

Streamflows in this area – including Wyoming, Montana, northern Idaho, most of Washington, and on into southcentral British Columbia – were at very high, often record, levels. This is reflected in the map, where the dark blue points represent the 100th percentile, meaning that this May is the highest flow in the historical record.

This extensive and rapid snowmelt led to flooding on several rivers. It also has been a much earlier melt than usual in this region, so that now most of the snowpack is gone, and rivers are receding rapidly.

Meanwhile, in the southern parts of the West, May streamflows were at record low levels due to the lack of snowpack throughout the winter.

This extreme contrast between regions, with such a sharp demarcation between them, combined with such an early snowmelt in the north, is highly unusual and has important agricultural water supply implications.

In the north, if this May streamflow was not captured in reservoirs, what was an abundant water supply outlook earlier in the year may now be below normal, as most of the snowmelt has already occurred, leaving little to come during the rest of the growing season.

In the south, the lack of snowpack has led to a water-short outlook all along, but the intensity and extent of this shortage is unusual.

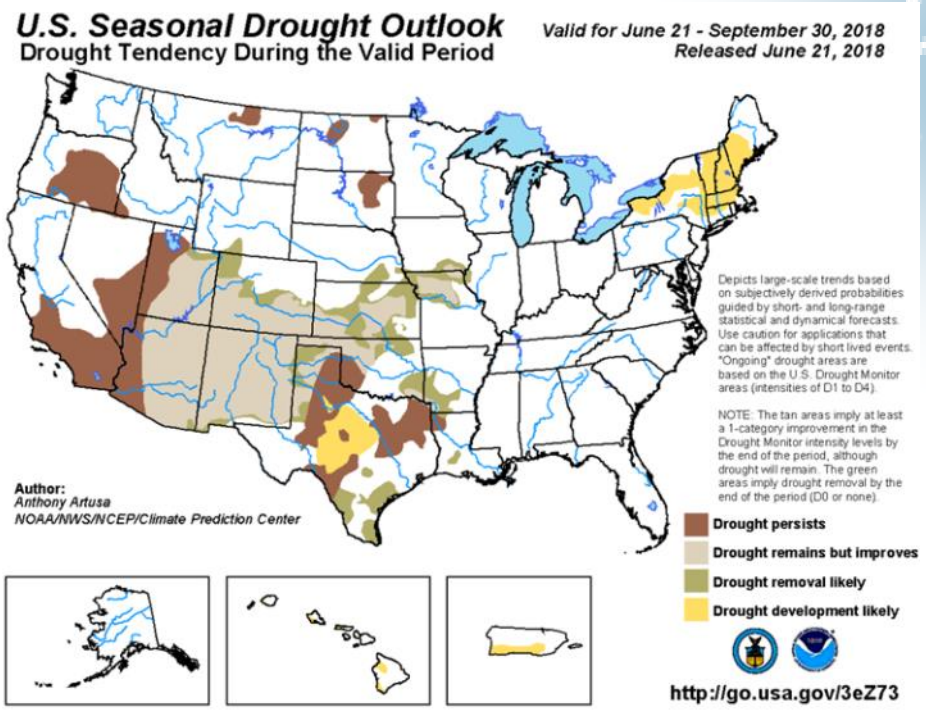
Field Operations Workshop 2018, Boise, Idaho

Attendees at the 2018 Field Operations Workshop included hydrologists, hydrologic technicians, and electronics technicians representing the Snow Survey and Water Supply Forecasting Program. The Idaho Data Collection Office hosted the annual workshop.

Climate Prediction Center 3-Month Drought Outlook

The NOAA Climate Prediction Center 3-month U.S. Seasonal Drought Outlook for June through September shows drought conditions improving in the southern and central Rockies. Drought persists in parts of Texas, southern California northward through Nevada and western Utah, and eastern Oregon.

Drought development is likely in central Texas and the Northeast during this period.



Upcoming events

Events of interest in the coming months.

What: Western States Water Council Summer Meeting

When: August 1-3, 2018

Where: Newport, OR

More Information: Upcoming Meetings

What: Global Climate Action Summit

When: September 12-14, 2018

Where: San Francisco, CA

More information: Summit Website

What: 9th Annual Northwest Climate Conference

When: October 9-11, 2018

Where: Boise, ID

More Information: Conference Website

What: Western States Water Council Fall Meeting

When: October 23-26, 2018

Where: Coeur d'Alene, ID

More Information: Upcoming Meetings

What: Oregon Water Law Conference

When: November 8-9, 2018

Where: Portland, OR

More Information: Conference Agenda and Registration

What: American Meteorological Society Annual Meeting

When: January 6-10, 2019

Where: Phoenix, AZ

More Information: Meeting Website

What: Westwide Snow Survey Training School

When: January 6-11, 2019

Where: Crested Butte, CO

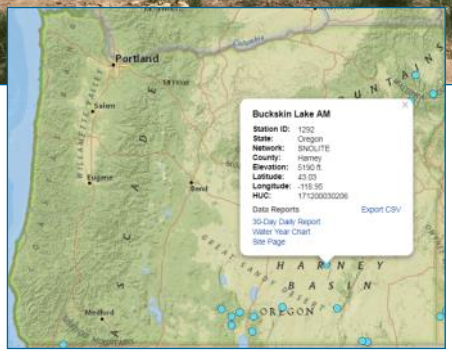
More Information: Chris Brown, 503-414-3090

What: 87th Western Snow Conference

When: April 15-18, 2019

Where: Reno, NV

More Information: Ron Abramovich, 208-378-5741



This month's Featured Photo is the newest addition to the NRCS real-time snowpack monitoring network. This is the Buckskin Lake SNOLITE site, located in southeast Oregon. The site was installed in May of this year by Oregon Snow Survey Hydrologists Josh Roach and Lauren Austin.

Web pick of the month: Snow Drought

The National Integrated Drought Information System (NIDIS) recently introduced a web page to share material about snow drought conditions in the West.

What is "snow drought"?

As defined by the American Meteorological Society, snow drought is a "period of abnormally low snowpack for the time of year, reflecting either below-normal cold season precipitation (dry snow drought) or a lack of snow accumulation despite near-normal precipitation (warm snow drought), caused by warm temperatures and precipitation falling as rain rather than snow or unusually early snowmelt.

The new web page is the product of a multi-agency effort to increase awareness of snow drought and its impacts, and provide tools and data to decision-makers and resource managers.

The National Water and Climate Center contributes regularly to the site, providing an interactive map of snow water equivalent data for high-elevation sites in the West.

Snow Survey and Water Supply Forecasting Program

Resource Locator

Here's a handy reference for finding resources in the Snow Survey and Water Supply Forecasting Program.

Where	What	Who	How
Alaska	Forecast Hydrologist	Jolyne Lea	503-414-3040 jolyne.lea@por.usda.gov
	Data Collection Office Supervisor	Daniel Fisher	907-671-7746 daniel.fisher@ak.usda.gov
Arizona	Forecast Hydrologist	Jolyne Lea	503-414-3040 jolyne.lea@por.usda.gov
	Water Supply Specialist	Travis Kolling	602-280-8834 travis.kolling@az.usda.gov
California	Forecast Hydrologist	Jolyne Lea	503-414-3040 jolyne.lea@por.usda.gov
	Water Supply Specialist	Greg Norris	530-792-5609 greg.norris@ca.usda.gov
Colorado	Forecast Hydrologist	Cara McCarthy	503-414-3088 cara.s.mccarthy@por.usda.gov
	Hydrologist	Karl Wetlaufer	720-544-2853 karl.wetlaufer@co.usda.gov
	Data Collection Office Supervisor	Brian Domonkos	720-544-2852 brian.domonkos@co.usda.gov
Idaho	Data Collection Officer (acting)	Dan Tappa	208-378-5740 daniel.tappa@id.usda.gov
	Forecast Hydrologist	Gus Goodbody	503-414-3033 angus.goodbody@por.usda.gov
	Water Supply Specialist	Ron Abramovich	208-378-5741 ron.abramovich@id.usda.gov
Montana	Data Collection Office Supervisor	Mage Hultstrand	406-587-6844 mage.hultstrand@mt.usda.gov
	Forecast Hydrologist	Cara McCarthy	503-414-3088 cara.s.mccarthy@por.usda.gov
	Water Supply Specialist	Lucas Zukiewicz	406-587-6843 lucas.zukiewicz@mt.usda.gov
Nevada	Forecast Hydrologist	Jolyne Lea	503-414-3040 jolyne.lea@por.usda.gov
	Water Supply Specialist	Jeff Anderson	775-857-8500 x152 jeff.anderson@nv.usda.gov
New Mexico	Forecast Hydrologist	Gus Goodbody	503-414-3033 angus.goodbody@por.usda.gov
	Water Supply Specialist	Chris Romero	520-292-2999 x107 chris.romero@nm.usda.gov
Oregon	Forecast Hydrologist	Cara McCarthy	503-414-3088 cara.s.mccarthy@por.usda.gov
	Hydrologist	Melissa Webb	503-414-3270 melissa.webb@or.usda.gov
	Data Collection Office Supervisor	Scott Oviatt	503-414-3271 scott.oviatt@or.usda.gov
Utah	Forecast Hydrologist	Gus Goodbody	503-414-3033 angus.goodbody@por.usda.gov
	Snow Survey Supervisor (acting)	Troy Brosten	385-285-3114 troy.brosten@ut.usda.gov
Washington	Forecast Hydrologist	Gus Goodbody	503-414-3033 angus.goodbody@por.usda.gov
	Water Supply Specialist	Scott Pattee	360-428-7684 scott.pattee@wa.usda.gov
Wyoming	Forecast Hydrologist	Cara McCarthy	503-414-3088 cara.s.mccarthy@por.usda.gov
	Water Supply Specialist	Ken Von Buettner	307-233-6743 ken.vonbuettner@wy.usda.gov
All States	Center Director/Program Manager	Mike Strobel	503-414-3055 michael.strobel@por.usda.gov
	Management Analyst/IT Program Lead	Rashawn Tama	503-414-3010 rashawn.tama@por.usda.gov
	Water & Climate Monitoring Team Lead	Deb Harms	503-414-3050 deb.harms@por.usda.gov
	Water & Climate Services Team Lead	Cara McCarthy	503-414-3088 cara.s.mccarthy@por.usda.gov
	Administrative Assistant	Jo Huelshoff	503-414-3031 jo.huelshoff@por.usda.gov
	Database Manager	Maggie Dunklee	503-414-3049 maggie.dunklee@por.usda.gov
	Database Manager	Vacant	
	Development Hydrologist	David Garen	503-414-3021 david.garen@por.usda.gov
	Electronics Technician Lead (EMF)	John Weeks	john.weeks@por.usda.gov
	Electronics Technician (EMF)	Alex Rebentisch	alexander.rebentisch@por.usda.gov
	Hydrologist (Water & Climate Monitoring)	Chris Brown	503-414-3090 chris.r.brown@por.usda.gov
	Operations Specialist (SNOTEL/SCAN)	Vacant	
	Resource Conservationist	Vacant	
	Statistical Assistant/SCAN QC	Peter Briggs	503-414-3061 peter.briggs@por.usda.gov

Contact Help Center

There's an online tool to help locate resources within the Snow Survey and Water Supply Forecasting Program.

Click here to open the **Contact Help Center**. Don't forget to bookmark the url.

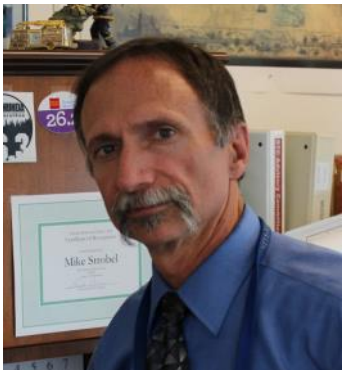
National Water & Climate Center
Natural Resources Conservation Service
U.S. Department of Agriculture
www.wcc.nrcs.usda.gov

1201 NE Lloyd Blvd.
Suite 802
Portland, OR 97232

Editor: Jacquie Workman
Phone: 503-414-3038
E-mail:
jacquie.workman@por.usda.gov

For issues of ***SnowNews*** go to:
www.wcc.nrcs.usda.gov/SnowNews/SnowNews_landing.htm

Director's Corner: Balance in Management



We often approach problems in life with a focus that overlooks the critical need for balance.

As a manager, addressing priority issues by investing in solutions is what I believe all managers should do. However, focusing only on the highest priority while overlooking other important, if not critical, needs can be a recipe for failure. I think all managers are guilty of this at some time, even though we know better. The boiling pot needs attention, but one needs to also stir and adjust other pans as well.

I think of the analogy of a family with a sick child. Of course the parents need to give that child special care and attention, but not at the risk of ignoring the basic needs (food and nurturing) of the other children in the family. The sick child is a priority, and other parts of the family can get by with less, but there remains a risk in focusing too strongly on only one child.

Like the performer with a dozen plates spinning on the ends of poles, if too much time is spent on keeping one plate spinning, then other plates will soon slow down and fall to the ground and shatter. Managing multiple activities, and priorities, is a talent of many good managers.

I served for 15 years as a volunteer firefighter, and was the chief of a small department for three of those years. One thing I learned in addressing structure and wildland fires is that you put the majority of your resources on the main fire, but keep a significant number of other firefighters taking care of smaller spot fires and controlling the spread to other areas.

Little things become big problems if left unchecked. Focusing on the big fire is a priority, but not the only priority on scene. Use your resources and personnel wisely.

Another thing we often overlook, and maybe because we prefer to simplify our perceptions of how things work, is what all resources it takes to make a team fully functional.

One example that comes to mind could be a country's military. Let's say a goal is to have a large infantry for national defense, which is a worthy goal, and therefore plan to increase the number of soldiers by some number.

I have read that it takes 11 support personnel (administrative, officers, quartermasters, cargo loaders, cooks, logistics, etc.) for each soldier on the ground. Whether that number is true or not, it illustrates the point that an army is much more than just soldiers in battle, but also all the people that are needed in support.

This question comes up often in our line of work where someone will ask me about installing a new SNOTEL or SCAN site. I have to explain that the cost and effort are not only the equipment, but there is annual maintenance, contracting, acquisition of materials, travel, salaries and data quality and management. If we were just installing sites, our lives would be pretty simple, but there is much more we need to consider when agreeing to expand the networks.

Thus is the challenge of managing any program, project or agency. Priority issues need our time, energy and resources, but not at the risk of letting other, possibly smaller yet critical, needs be overlooked.

Sometimes we need to make those tough decisions to let some parts die off in order to invest in and grow other aspects of a program. But mostly, we need to keep continually aware of all the parts that make up the bigger picture and how all the pieces fit together to make an organization function.

I see this as my challenge as a manager, and one I hope to improve upon each year in the job.

It's a difficult road for managers, and we don't always make the right decisions. But keeping our eyes wide open and avoiding tunnel vision is always a best practice.

Little fires can become big issues if not kept as priorities in the grand scheme of things.

Mike